

ca

PROCESSING AND PROPERTY INDEX

2

The heat of dissociation of the molecule O_2 and Sutherland's constant for oxygen. S. BUNNELLER AND V. KONDRATIEV. *Nature* 125, 104-5(1930)---The mutual energy of two moles, at the moment of collision or heat of dissociation, D , is Sutherland's constant, C , which data the dependence of the effective area of the mol. on the temp. The values of D and C together are known only for oxygen. It is assumed that O_2 moles are assoc. into O_3 and that the dissociation energy of O_3 does not differ greatly in the liquid and gaseous states. A review of work on O_3 is given. H. W. WALKER

ASTM 5.6 METALLURGICAL LITERATURE CLASSIFICATION

1304 130479

1304 130479

1304 130479

The radiation of light during the formation of molecules from atoms. V. KONDRAT'EV. *Fizik. Z. Sovetskijun.*, 1, 501-104 (1932).—The relative probability that a molecule synthesized from atoms will be stabilized by emission of radiant energy rather than by three-body collisions is discussed. Only at low pressures and high temps. does stabilization by radiation become more probable than stabilization by three-body collisions.

P. H. EMMETT

Zhu-Fiz

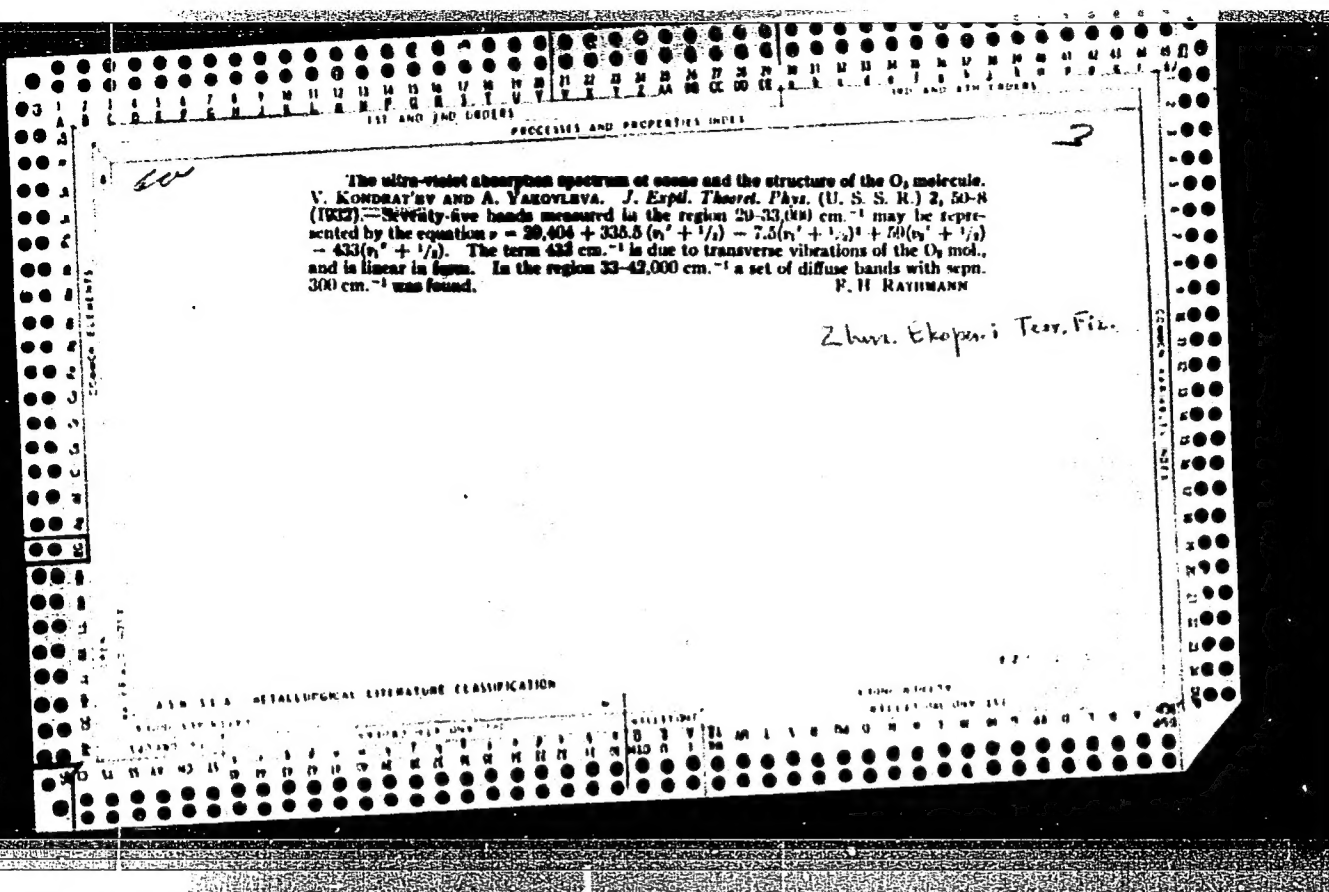
KONDRAT'YEV, V. V.

Structure and spectra of complex molecules. V. N. KONDRAT'YEV, *Usp. Khim.* (Progress Chemistry) U. S. S. R. 1: 531-77 (1972) --A review P. H. R.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

LIST AND 2ND QUARTER																									
PROCESSES AND PREPARED BY																									
<p><i>CA</i></p> <p>Spectroscopic detection of monomolecular layers of adsorbed gases. S. GOLUB AND V. KONDRAT'EV. <i>Physik. Z. Sowjetunion</i> 1, 619-20 (1932).--The changes that take place within molecules of different kinds adsorbed on different surfaces and the absorption spectra of adsorbed molecules are discussed. A comparison of the spectra of gaseous and adsorbed NO_2 shows neither a shift nor a widening of the bands but does show intensity differences indicative of the formation of a monomol. film. The similarity of the spectra is explained by the failure of a neutral adsorbent such as glass to effect any noticeable change in the energy levels of the mol. The absorption spectrum of NO_2 dissolved in benzene compared with that of the gas shows no shift but some broadening of the bands. These effects are explained and others predicted from a study of the potential energy curve of the mol. Absorption spectra of Na and K were similarly made but no adsorbed film could be formed. This investigation will be extended to adsorbed gases on sputtered metal films.</p> <p style="text-align: right;">HOWARD AGNEW SMITH</p> <p style="text-align: right;"><i>Z. Phys. Fil.</i></p>																									
<p>ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION</p> <p>1932-1933</p>																									



ALPHABETIC INDEX																										NUMERICAL INDEX																									
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KONDRAT'YEV, V.N.																																																			
<p>Present physical methods of study of the structure of molecules. V. N. Kondrat'ev. <i>Trans. V.I. Mendeleev Congr. Theoret. Applied Chem.</i> 1972, 3, Pt. 1, 161-74 (1975).—A review of the optical and electronic methods used at present. R. R. Stefanovsky</p>																																																			
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PROCESSSES AND PROPERTIES INDEX																																																																																																																							
<p>CP</p> <p>244. Fiz.</p> <p>The extinction of atom fluorescence. B. KIEHLBACH, V. N. KONDRATYEV, AND A. LAUFENBERG. <i>Physik. Z. Sowjetunion</i> 2, 201-20 (1932).—Expts. on the extinction of Na fluorescence by N_2 and CO are described. The extinction cross section decreases with the energy of the Na atoms, as noted by Terzido and Fydeshajewa using I_1. An interpretation of the mechanism of the reactions is given on the basis of the potential-energy curves between the colliding atoms. General claims of at. and mol. processes resulting in the extinction of at. fluorescence are also discussed and illustrated by examples.</p> <p>MORRIS MUNKAT</p>																																																																																																																							
ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION																																																																																																																							
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KONRAT'YEV, V.N.										PROCESSING AND PROPERTIES INDEX									
<p>The nature of the red shift in the infra-red emission bands in flame spectra. V. N. Konrat'ev. <i>J. Exptl. Theoret. Phys. (U.S.S.R.)</i> 3, 265-72 (1967); <i>cf. C. A. 27</i>, 5645. — The red shift in the intensity max. of the emission band relative to the position of the max. of the corresponding absorption band is very characteristic for many flame spectra. It can be explained by means of the superposition of single bands, which correspond to the oscillation quanta emitted by the moles, when strongly oscillating as a result of the reaction which is taking place. The quantum relation between the magnitude of the shift of the intensity max. of the band and the energy of oscillation is established so that it is possible to estimate the energy of the mol. by means of the measured shift. This makes it possible to use the analysis of the infra-red flame spectra for detg. the chem. processes taking place in the burning zone.</p> <p>Marie Goyer</p>										<p>Zhurn. Khim. i Teor. Fiz.</p>									
<p>ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>										<p>COMMON LITERATURE INDEX</p>									
<p>1 2 3 4 5 6 7 8 9 10</p>										<p>11 12 13 14 15 16 17 18 19 20</p>									

4463. Elementary Processes in Highly-Rarefied Plasma. V. Kondratyev. *Phys. Zets. d. Sovjetunion*, 4. 1. pp. 57 70, 1953. In German.—The luminous spectrum that occurs in the chemical reaction $K + HgCl_2$ is investigated in the region between 7700 to 4000 Å for different pressures of admixed nitrogen. The linear dependence of the quantity J_{λ} , which appears as a measure of the weakening of the intensity, is ascertained for nitrogen pressures down to 0.25 mm. of mercury for the case of the violet potassium line. A calculation is made of the probability with which the KCl molecules that excite the line spectrum of K become unactivated. Specially devised experiments show that the exciting mechanism is the same for the red as for the violet K lines. A discussion is given of the nature of the active molecules as exciters of the luminous spectra produced by chemical reactions. H. L. B.

CPA

6

The visible absorption spectrum of iodine and the induced predissociation of the iodine molecule. V. Kondrat'ev and L. Polak. *Physik. Z. Sowjetunion* 4, 764-81 (1963) (in German).—The absorption curves of I in the range 6500–5100 Å. for various pressures of N₂, O₂, HCl and of I₂ are recorded, showing 3 maxima corresponding to the levels in the excited mol. corresponding to the vibrational quantum nos., 22, 29 and 39. The effective cross-section of N was calcd. to be 30 times the cross section from kinetic theory. The effect of added I on the absorption spectrum resembles that of other gases. L. G.

ASAC-51 A METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND CODES										PROCESS AND PROPERTIES INDEX										3RD AND 4TH CODES									
<p>Atmospheric water vapour band 6324 Å. in the solar spectrum. V. N. KONDRAKOV and D. I. KROKHIN (Compt. rend. Acad. Sci. U.R.S.S., 1934, 1, 170-176).—225 new lines have been measured over an interval of 170 Å. around 6324 Å. in the spectra of the sun near the horizon. By comparison with the same spectral region for the sun higher in the sky some of these lines have been identified as due to terrestrial H₂O vapour, and three others as new lines of the O₂ band. From measurements of the 6324 Å. H₂O band of the 2, 1, 1 vibration state, val. of the line structure constants, and moments of inertia of the H₂O mol. are calc. The valency angle and O-H distance are 104.18° and 1.016×10^{-8} cm., respectively. J. W. S.</p>																													
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1ST AND 2ND CODES																										3RD AND 4TH CODES																									
PROCESSING AND PROPERTY INDEX																																																			
<p><i>BC</i></p> <p>Atmospheric O_3 bands in the solar spectrum. A. L. Litovsky and V. N. Kondratyev (Geophys. Acad. Sci. U.S.S.R., 1964, 1, 345-349). The atm. absorption spectra has been studied over the region 4000-5000 Å, with the sun 3° above the horizon. From the relative intensities of the H and F O_3 bands, the ratio $O_3^H : O_3^F$ is calc. as 565:1 at 4.1821, 4829. J.W.S.</p>																																																			
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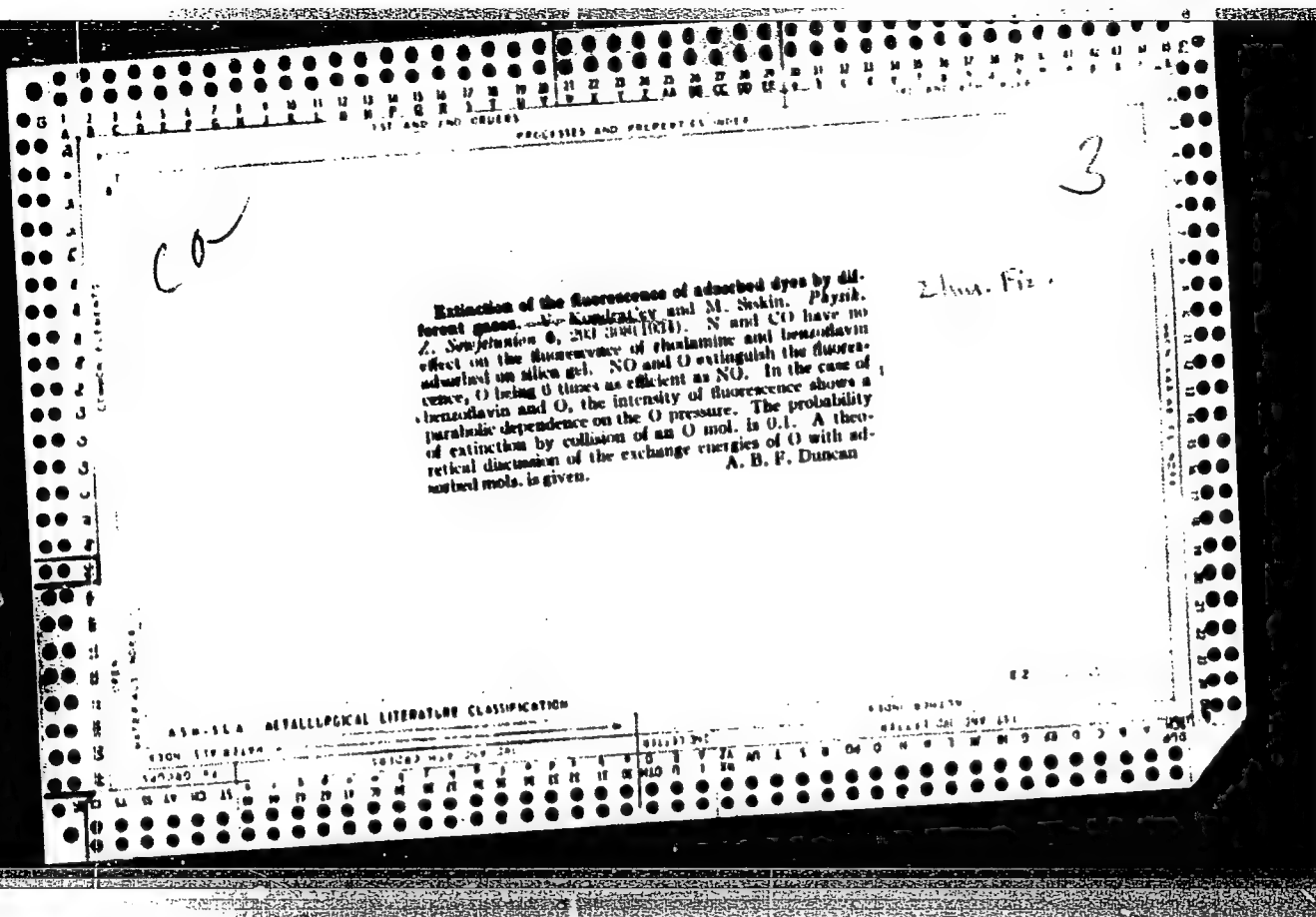
153

204. Quenching of Fluorescence of Adsorbed Dyes by Gases. V. Kondratyev and M. Shtin. *Phys. Zvez. d. Sopotstven.*, **8**, pp. 265-268, 1954. In German.—The influence of N_2 , CO , NO , and O_2 on the brightness of fluorescence of benzofluorin adsorbed in silica gel and of fluorescein by O_2 has been studied. NO and O_2 have a marked effect of quenching on benzofluorin. The relative intensity falls off hyperbolically with the gas pressure in the case of O_2 . The probability of energy exchange between an excited benzofluorin molecule and the adsorbed O_2 is considered to be high. An attempt is made from the quantitative results to estimate the size of the molecule and life of the excited state of benzofluorin.

J. E.

ASD 1.1A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDER		PROCESSING AND PROPERTY INDEX	
<p><i>BC</i></p> <p>Photochemical oxidation of hydrogen iodide. V. KONDRATYEV, E. KONDRATYEV, and A. LAUREN (J. Phys. Chem., U.S.S.R., 1964, 6, 1411-1423).—A linear relationship was established between the</p> <p>fraction of the HI oxidized and the ratio $HI:O_2$. The reaction mechanism is discussed. Ch. Am. (c)</p>		<p><i>A-1</i></p> <p><i>Zhu. Fiz. Khim.</i></p>	
<p>ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>REGION: 5LA</p>		<p>REGION: 5LA</p>	
<p>SECTION: 5LA</p>		<p>SECTION: 5LA</p>	
<p>SECTION: 5LA</p>		<p>SECTION: 5LA</p>	



1ST AND 2ND PERIOD										3RD AND 4TH PERIOD									
PROCESSES AND PROPERTIES INDEX																			
<p>BC</p> <p style="text-align: right;">A-1</p> <p style="text-align: center;"> Phenomena of the exchange of wave energy in collisions of molecules. V. KONDRATSEV (Uspechi Fiz. Nauk, 1984, 24, 982-1008).—A review. <i>Uspechi</i> Ch. Abn. (e) </p>																			
ASD-5LA METALLURGICAL LITERATURE CLASSIFICATION																			
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BC A-1

PROCESSES AND PROPERTIES INDEX

Induced chemiluminescence of mercury in the carbon monoxide-oxygen flame. V. KONDRATYEV (Acta Physicochim. U.R.S.S., 1935, 2, 126-128).—Hg becomes chemiluminescent in CO+O₂ at 650–700°. Since the line 2537 Å. is below the shortest λ of the CO flame spectrum, it is concluded that the activation must be due to collision with excited CO₂. A similar mechanism is proposed for the activation of N₂ in the explosion of CO+O₂+N₂ at high pressure. R. S.

ASM-51A METALLURGICAL LITERATURE CLASSIFICATION

SECTION DIVISION

SECTION DIVISION

BC		A-1	
<p>Induced pre-dissociation and energy exchange in nitric oxide. E. KOSMANOVA and V. KONDRATOV (Dokl. Akad. Nauk SSSR, 1935, 2, 1-10).</p> <p>The ratio of intensities of the β- and γ-bands in the emission spectrum of NO alone and when mixed with A has been determined. In the spectrum of pure NO the γ-bands are much more intense than the β-bands, but in that of the mixture they are of approx. equal intensity. The phenomena can be explained on the hypothesis of induced pre-dissociation in the β state. The probability of the transfer of a quantum of vibrational energy of an excited NO mol. into kinetic energy on collision with an A atom is calc. to be approx. 1.</p> <p style="text-align: right;">A. J. M.</p>			
<p>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</p>			

[illegible]

226. Photochemical Oxidation of Nitrogen. V. Kondratyev.
Acta Physicochimica, 2, 2-3, pp. 247-253; *Diss.*, 234, 1933. 7n Engll.

—A series of experiments is made on the photochemical oxidation of N_2 and CO by O_2 and of CO by NO , as well as on the dissociation of NO_2 by radiation from a quartz mercury arc. An increase in the yield of NO_2 by the addition of Cl_2 and H_2 to the mixture of N_2 and O_2 is found to be described, with which the depolarizations have been measured for CH_4 , H_2 , CO_2 and H_2O of the light scattered by the molecules (Rayleigh scattering). The results of previous workers are compared, and the great diversity of the results obtained is stressed. An analysis is made of the errors to which each apparatus is subject, and the chief source of error is thought to be due to a property of the Wollaston prism frequently employed. It is shown that if the beam of light striking the Wollaston is not of uniform intensity across its cross-section, the Rayleigh \tan^2 a law will not be fulfilled, but the difficulty can be got over by replacing \tan^2 a with $\tan a_1 \times \tan a_2$, where a_1 has been obtained after rotating the Wollaston through 180° from the position in which a_2 was found. For CH_4 is found ρ (depolarization) = 0, whereas earlier workers obtained 0.015 and 0.0112. This removes the objection against the tetrahedral symmetry of CO_2 . For CO_2 is found 0.9784 ± 0.008 ; for H_2 , 0.000 ± 0.001 , and for N_2O , 0.100 ± 0.004 . A. C. M.

KONDRAT'YEV, V.N.

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PROCESSED AND PREPARED BY

The effective cross section in the recombination of atoms with radiation. V. N. Kondrat'ev. *J. Appl. Theoret. Phys.* (U. S. S. R.), 20:4-1965. It is shown that the effective cross section q of the recombination of atoms with radiation of light and the absorption coeff. K , found by Terenin and Prileshajeva (*C. A.*, 27, 3141) for the case $h\nu$ much less than $h\nu_0$ is also applicable for $h\nu$ much greater than $h\nu_0$. Conclusion: The recombination probability is independent of the relative velocities of the atoms provided the vibrational state of the resulting mol. is not considered. F. H. Rathmann

Zhur. Eksp. i Teor. Fiz.

ASD-15-A DETAILORPHAL LITERATURE CLASSIFICATION

157285-1

PROCESSING AND PROPERTIES INDEX									
<div style="position: relative;"> SA <div style="position: absolute; right: 10px; top: 10px; text-align: right;"> A53 D I </div> <p style="margin-top: 20px;"> 1894. Quenching of Na Fluorescence. V. Kondratjev and M. Siskin. <i>Phys. Zeits. d. Sowjetunion</i>, 2, 6, pp. 644-646, 1931. In German. —NaI vapour is excited by radiations from Al, Zn and Fe sparks and the quenching of the D fluorescence of Na by admixture with A, N₂, NO and O₂ is investigated. In A the quenching is independent of the energy of Na' (which is varied from 2 to 23 kcal./gm. atom), and the quenching cross-section is about 0.1 of the gas-kinetic cross-section. In N₂ and NO the peculiar dependence of the quenching cross-section on the energy of Na' is explained by the existence of two types of photochemical dissociation of NaI. In NO and O₂ the quenching is greatest and independent of the resonance between the vibrational energy of NaI and the electronic excitation energy of Na. The chief factor appears to be the magnitude of the forces of interaction of the colliding particles, the thermal effect of the possible reaction Na' + AB → NaA + B (where AB = quenching molecule) being taken as a measure of these forces. W. J. </p> </div>									
METALLURGICAL LITERATURE CLASSIFICATION									
FROM SYNDICATE INFORMATION DIVISION									
RESEARCH DIVISION									
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CA 3

Optical Method of determining stable products in flames.
V. Kondrat'ev. *Dokl. akad. sci. U. S. S. R., Classe sci. math. nat., Ser. chim.* No. 2, 363-70 (in English 370-81) (1958). — The short-wave portion of the radiation of many common flames is considered chemiluminescent. In the burning zone about 10% of the CO₂ mole. are electron-excited; this high concn. of excited mole. is believed to play an important part in the kinetics of the reaction. Spectral analysis has indicated the presence of the free radicals OH, PO, SO, NH, CH and C₂. OH has been found in the combustion zone of H₂ and a number of intermediate oxidation products in the burning zone of hydrocarbons. H. E. Mesmore

12. AK Nauk SSSR.
Ser. Khim.

ASD-34A METALLURGICAL LITERATURE CLASSIFICATION

<p>111 AND 110C (00143)</p>										<p>100 AND 07M (0018)</p>									
<p>PROCESSING AND PROPERTIES INDEX</p>																			
<p>3262. Flame of CO and O₂. H. Kondratjew and V. Kondratjew. <i>Acta. Physicochimica</i>, 4, 6, pp. 647-666, 1938. In English—The effect of pressure (10 to 180 mm.) on the intensity of the visible radiation emitted by the flame of a CO + O₂ mixture is investigated. The ratio of the light intensity to the rate of CO₂ formation increases with pressure up to a maximum at 35-37 mm. This decrease in the relative intensity from the maximum to its value at 180 mm. follows a hyperbolic law indicating that the decrease is due to quenching of the chemiluminescence. The quenching efficiency is of the order of unity. It is suggested that there are two mechanisms for the oxidation of CO and that about one out of every ten CO₂ molecules formed in the flame is excited. Such a high proportion of excited CO₂ molecules indicates that they must play an important part in the kinetics of oxidation of CO. A. H.</p>																			
<p>ASS. S. L. A. METALLURGICAL LITERATURE CLASSIFICATION</p>																			
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1ST AND 2ND DEGREE PROCESSES AND PROPERTIES INDEX

100 AND 2TH DEGREE

a-1

Spectrum of the cold flame of ether. V. KONDRAKOV (Acta Physicochim. U.R.S.S., 1933, 4, 535-538). The measurements by Emel'ev of the bands in the spectrum of the cold flame of Et_2O (A., 1933, 1315) are similar to those by Hespberg and Franz of the fluorescence spectrum of Et_2O (A., 1932, 888). It is concluded that the emitters in the cold flame of Et_2O are CH_2O mole.

Q T R.

ASS-5LA METALLURGICAL LITERATURE CLASSIFICATION

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12000 50M1/V 621131 ONE GNV 191

1ST AND 2ND COLUMNS																										3RD AND 4TH COLUMNS																									
PROCESSES AND PROPERTIES INDEX																																																			
<p>2669. Luminescence of Phases. V. Kondratyev. <i>Acta Physica Polonica</i>, 8, pp. 68-71, 1968. In German. — Thermoluminescence is first considered and it is concluded that the specific property in the absence of a selective emission consists of a proportionality between intensity and pressure. Chemiluminescence is treated more fully, the heat emission of a number of reactions being given, and the significance for chemical kinetics being considered. F. S.</p>																																																			
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5451. Hydroxyl Radicals in the Electric Discharge in Water Vapour. V. Kondratyev and M. Zilkin. *Acta Physicochimica*, 8, 3, pp. 301-324, 1938. In English.—The sensitivity of the optical method of measuring small concentrations of gases (by their absorption spectra) may be increased by substituting a line source for the usual continuous source of light. This method is now used for the study of OH radicals in the electric discharge. Full experimental details are included. The temperature of the radicals determined spectroscopically is found to be about 100° C. with discharge currents of the order of 100 mA. On the assumption that the absorption coefficient of the OH is of the same order of magnitude as that of the Na atom (for the D lines), a calculation is made of the concentration of the OH radicals. With different discharge currents the concentrations correspond to partial pressures of the order 10^{-6} to 10^{-4} mm. It is shown that the relation between the concentration of OH radicals (\bar{n}) and the time (t) elapsing from the moment of stopping the discharge, the strength of the discharge current (I) and the vapour pressure (p) of the water, satisfy quantitatively the law $\bar{n}(t) = \alpha \sqrt{p} \sqrt{I} (1 + \beta \sqrt{p} \sqrt{I} t)$, based on the assumption that the OH radicals are destroyed by the process $2OH \rightarrow H_2 + O_2$. This process probably corresponds to the actual mechanism of the phenomenon, and its calculated efficiency is of the order of 0.61. H. H. Ho.

H. H. Ho.

Quenching of the fluorescence of sodium. V. Kondrat'ev and M. Zinkin. *J. Exptl. Theoret. Phys.* (U.S.S.R.) 6, 110-28 (1936). -- D fluorescence of Na excited in NaI by Al, Zn and Fe sparks was quenched by A, N and O. The effective cross sections are for A about $\frac{1}{2}$ in the gas-kinetic, while for N and O they depend on the energy of the Na atom. This is due to two types of photoabsorption of NaI. (Mg, NO, O, CO and H, the most effective quenchers are NO and O). This effect, however, is due not to the resonance effect but to the chem. interaction of the colliding particles. P. M. Nathmann

Zhuo-Huajun: i Ten. Fin.

A 30-36 A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p>ca</p> <p>Investigation of the CO-O₂ flame. I. Influence of the pressure of the CO-O₂ mixture on the intensity of the visible flame. K. Kondrat'ev and V. Kondrat'ev. J. Phys. Chem. (U. S. S. R.) 6, 124-9 (1962). The light yield rises rapidly as the pressure increases, shows a max. at about 3.7 mm. and then falls along a hyperbolic curve. about 1 in 10 CO₂ moles. is in the excited state. F. H. Rathmann</p> <p>zhur. Fiz. Khim.</p>										<p>4</p>									
<p>ASD-3LA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
<p>1000 1000000</p>										<p>1000 1000000</p>									
<p>10000 100000</p>										<p>10000 100000</p>									

PROCESSIES AND PROPERTIES INDEX																									
<p>BC</p> <p>Photochemical activity of the quartz mercury arc towards the reactions $\text{CO} + \text{O}_2$ and $\text{CO} + \text{NO}$. M. SUSHIN, V. KONEVATSKY, and T. NUNUKH-KHAYROV (J. Phys. Chem. Russ., 1935, 9, 281-289).-- Filtration of the arc radiation through CO diminishes the rate of reaction. NO absorbs the active radiation as well and emits two series of the γ-band; the activation of NO is presumably produced by the line 2234.9 A. and other weak lines. The dependence of the fluorescence of the O_2 on the pressure accords with Rasetti's theory (A., 1929, 866). J. J. B.</p>																									
<p>438-35.4 METALLURGICAL LITERATURE CLASSIFICATION</p>																									
<p>12041 54182117M</p>																									
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COMMON ELEMENTS													COMMON RARE EARTH ELEMENTS													COMMON METALS													COMMON NON-METALS												
<p><i>CH</i></p> <p>Structure of the ultraviolet absorption spectrum of ozone. A. Yakovlev and V. Kondrat'ev. <i>Phys. Z. Neptunium</i> 9, 106-8 (1936).—A study of the ultraviolet spectrum of O₃ up to 3000 Å, using a 3-m. path and a powerful ozone, and a more accurate measurement of the band heads in the region λλ 2500-3100 leads to the following formula for the bands of the bands: $\sigma = 20,447 + 620.3\nu - 10.0\nu^2 - 0.33\nu^3 + 381.7\nu^4 - 4.8\nu^5 - 0.17\nu^6 - 12.0\nu^7 - 1.82\nu^8 - 0.5\nu^9 - 100\nu^{10} + 11.5\nu^{11}$. This formula covers the range 2000 to 3000. Calcn. of energies of disson. and assignment of frequencies to vibrations in the mol. are discussed. C. E. P. I.</p>																																																			
<p>ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>																																																			

bc

a-1

Raman spectrum of an aqueous solution of KNO_3 . V. Kozlovskaya and O. Gorkina (Physikal. Z. Sowjetunion, 1952, 6, 279-283).—The Raman spectrum of aq. KNO_3 shows two lines $\nu_1 = 2900 \text{ cm}^{-1}$ and $\nu_2 = 670 \text{ cm}^{-1}$, attributed to the ion NO_2^- . Pure nitrite (ON^-) for the ions NO_2^- and NO_3^- are calc. by the usual equations and found to be 12%, \leq in the case of the isotopic mole. NO_2 and NO_3 . This anomalous result is discussed.

H. C. G.

ADD-51A METALLURGICAL LITERATURE CLASSIFICATION

25000 SYNOBIV 250000 MLY GNY GNY

25000 SYNOBIV 250000 MLY GNY GNY

CROSS ELEMENTS		PROCESSING AND PROPERTY INDEX		100 AND 200 CROST	
<p>2112. Induced Predissociation in the Visible Bromine Spectrum. L. Avramenko and V. Koshcheyev. <i>Phys. Zets. d. Sovetskoye.</i> 10. 8. pp. 741-749, 1968. 10 figures. Experiments are made upon the pre- dissociation induced in the visible absorption spectrum of Br₂ vapour. Four maxima of selective enhancement of absorption, corresponding to $v' = 23, 24, 29$ and 34, are observed and are interpreted as regions of in- duced transition of the excited Br₂ molecule to unstable electronic states. It is further observed that the plot of the reciprocal of the alteration of the absorption coefficient against the reciprocal of the pressure of the foreign gas is a straight line for pressures up to 600 mm. The effective cross- section for the collisions, as deduced from these data, comes out to be about 10 times greater than the gas-kinetic cross-section. The observed effects are practically independent of that nature of the foreign gas, whence it is concluded that chemical forces play a small part in the mechanism. L. A. W.</p>					
<p>ASR.SLA METALLURGICAL LITERATURE CLASSIFICATION</p>					
<p>100000 100000 100000 100000 100000 100000</p>					

Be

Radical OH in hydrogen flames at low pressures. V. KOPCHENKO and M. ZAKHAR (Acta Physicochim. U.R.S.S., 1957, 6, 307-310). From absorption spectra the presence of OH radicals, at a

concn. approx. 2000 times the equilibrium concn., has been established in the combustion zone of H_2 burning in O_2 at 470–500° and at 2–25 mm. Hg. The absorption coeff. of the individual rotation lines tend to calc. val. for the temp. of the flames approx. equal to val. obtained with a thermocouple. An important role in the combustion mechanism of H_2 is ascribed to the OH radicals.

C. R. H.

C.R.H.

ASNT-3LA METALLURGICAL LITERATURE CLASSIFICATION

BC
a-1

Flame of carbon monoxide and oxygen. II. Influence of the composition of the mixture on the intensity of the visible radiation from the flame. E. E. KONDRATIEVA and V. KONDRATYEV (Acta Physicochim. U.S.S.R., 1967, 3, 825-830; cf. A., 1968, 1408).—At $p_{\text{CO}} = 60$ mm. a decrease in light yield is found with $p_{\text{O}_2} > 20$ mm., whilst with $p_{\text{O}_2} = 20$ mm. the decrease is obtained with $p_{\text{CO}} > 40$ mm. This is attributed to quenching of chemiluminescence, the quenching const. being 0.084 and 0.168 mm.⁻¹ for CO and O₂ respectively. The greater val. for O₂ is attributed to the possible process $\text{CO}_2^* + \text{O}_2 \rightarrow \text{CO}_2 + 2\text{O}$, leading to launching of reaction chains. With $p_{\text{CO}} + p_{\text{O}_2} = 57$ mm., an increase in light yield is obtained with increasing [CO], ascribable in part to quenching of chemiluminescence. In all cases deviations from the theoretical quenching curves indicate a change in reaction mechanism. Addition of N₂ at $p_{\text{CO}} = 60$ mm., $p_{\text{O}_2} = 20$ mm. causes an increase in total combustion, attaining a max. at $p_{\text{N}_2} = 100$ mm. The change in light yield indicates that the mechanism is changed and involves oxides of N.

J. W. S.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION
6-2

FROM SYNTHESE										FROM ANALYSIS															
SERIES 1					SERIES 2					SERIES 3					SERIES 4										
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1ST AND 2ND ORDER										3RD AND 4TH ORDER									
PROCESSES AND PROPERTIES INDEX																			
<div style="position: absolute; top: 10px; left: 10px; font-size: 24px; font-weight: bold;">BC</div> <div style="position: absolute; top: 10px; right: 10px; font-size: 24px; font-weight: bold;">a-1</div> <div style="position: absolute; top: 50px; left: 300px; width: 60%; text-align: center;"> <p>Flame of CO and C₂H₄. III. Absolute intensity of the spectrum radiation from the flame. R.E. Kuznetsov, A. and V. Kuznetsov (Acta Physico-Chim. U.S.S.R., 1957, 11, 1, 1-10, 1480).</p> <p>The flame intensity of the spectrum radiation from the flame of CO and C₂H₄ was measured photometrically in the flame of the burner. The rate of the reaction was determined by the taking into account the amount of the gas consumed. It is found that the amount of CO₂ mol. is formed for about every 100 mol. of CO, at 100 min. and 760°. This yield of CO₂ mol. is > the equilibrium val. for the temp. of the flame, so that these mol. have a chemical origin.</p> <p style="text-align: right;">W. R. A.</p> </div>																			
ASME-FLA METALLURGICAL LITERATURE CLASSIFICATION																			
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SECTION 97										SECTION 98									
SECTION 99										SECTION 100									

4542. Hydrogen Flame Spectrum. V. Kondratiev and M. Zibin. *Acta Physicochimica*, 7, 1, pp. 68-74, 1937. In English.—The spectrum of the diffuse band of electrolytic gas is studied. The intensity distribution in the OH bands differs from that found in ordinary flames on account of the comparatively low temperature. The relative intensities of the bands 2654 (0'0"), 2611 (1'0") and 2675 (2'1") correspond closely to the respective transition probabilities, and it is shown that excitation to the levels $v' = 0, 1$ and 2 of the OH molecule takes place in a single elementary act and that the heat of reaction of the process $H + H_2 + O_2 \rightarrow H_2O + OH$ is the source of the excitation energy. From the measurements of the absolute intensity of the OH spectrum it is shown that (1) the latter is of chemical origin and (2) approximately one excited OH molecule is formed in the zone of the diffuse flame for every 10^6 molecules of water produced.

67

Processes and Properties Index

Intensity in spectra of diatomic molecules. V. Kondaev, *J. Exptl. Theoret. Phys.* (U. S. S. R.) 7, 177, 82 (1937); *Chem. Zvest.* 1938, 1, 824. -- The formula used by Hutchisson (cf. C. A. 26, 5621) for the calcn. of the relative intensities of the bands in electron spectra of sym. diatomic mols. is also useful for the calcn. of the intensities in the spectra of asym. mols. when the bands arise through the combination of lower vibration levels. With OH and NO spectra as examples, it is shown that the formula mentioned gives a qualitatively correct distribution of intensity in these spectra. M. G. Moore

244. Theor. Phys. 1937

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

GROUPS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

1ST AND 2ND CROSS																										3RD AND 4TH CROSS																									
PROCESSES AND PROPERTIES INDEX																																																			
<p>Light absorption and absolute concentration of hydroxyl. I. AVRAMOV and V. KOLBARTSEV (Acta Physicochim. U.S.S.R. 1957, 7, 587-595) Abs. absorption spectra for OH bands in the OH band at $\lambda = 3000 \text{ \AA}$. are calc. by theoretical formulae from absorption measurements made at different temp. on the mixture $2/3 \text{ H}_2\text{O} + 1/3 \text{ O}_2$. The calc. heat of the reaction $\text{H}_2 + \text{OH} \rightarrow \text{H}_2\text{O}$ is 194 kg.-cal. and equilibrium constant for the reaction are derived. The data are used to find the concn. of OH radicals in a dil. H_2 flame. J. A. K.</p>																																																			
<p>438-55A METALLURGICAL LITERATURE CLASSIFICATION</p>																																																			
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<p>CO</p> <p>Hydroxyl radicals in hydrocarbon flames at low pressure N. Komsharov and M. Ziskin. J. Phys. Chem. (U.S. N. 19, 542, 52(1947)). - The temp. of the combus. thin zone of a $H_2 + O_2$ mixt. at 3-25 mm. pressure is 650° to 700° when the temp. of the vessel is 470-520° as measured by a thermocouple and 740-820° as calcd. from the ab- sorption spectrum around the band 2800 Å. This may be considered fairly good agreement. The OH concn. is several hundred times the equil. concn. at this temp. This indicates that OH radicals are the products of a chain reaction and are an important factor in the homogeneous oxidation of H_2. F. H. Rathmann</p> <p>Zhu-Fil-Khin</p>																									
<p>ASB. I. I. A. METALLURGICAL LITERATURE CLASSIFICATION</p>																									

BC A-1

Carbon monoxide-oxygen flame. II. Influence of composition on the intensity of the visible luminosity of the flame. III. Absolute intensity of electronic emission of the flame. E. KONDRATYUK and V. KONDRATYUK (J. Phys. Chem. Russ., 1937, 9, 734-745, 747-751; cf. A., 1938, 1409).—II. With $p_{O_2} = 40$ mm., the change in p_{O_2} from 30 to 380 mm. causes a decrease in luminosity which can be explained by a quenching of chemiluminescence with a quenching const. $K_q = 0.162 \text{ mm}^{-1}$. With $p_{O_2} = 20$ mm., the change in p_{O_2} from 40 to 180 mm. causes a quenching with the const. $K_q = 0.084 \text{ mm}^{-1}$. N_2 (0-440 mm.) causes a change in luminosity, indicating its influence on the mechanism of the reaction $CO + O_2$ (formation of N oxides). III. One excited CO_2 mol. is formed per 125 mols. of CO_2 in the CO flame at $p = 100$ mm. and 740° . The concn. of CO_2 in the flame is γ , the thermo-dynamical equilibrium val. E. R.

ASM-ISA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS																										PROCESSES AND PROPERTIES INDEX																										3RD AND 4TH ORDERS																									
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A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA AB AC AD AE AF AG AH AI AJ AK AL AM AN AO AP AQ AR AS AT AU AV AW AX AY AZ BA BB BC BD BE BF BG BH BI BJ BK BL BM BN BO BP BQ BR BS BT BU BV BW BX BY BZ CA CB CC CD CE CF CG CH CI CJ CK CL CM CN CO CP CQ CR CS CT CU CV CW CX CY CZ DA DB DC DE DF DG DH DI DJ DK DL DM DN DO DP DQ DR DS DT DU DV DW DX DY DZ EA EB EC ED EE EF EG EH EI EJ EK EL EM EN EO EP EQ ER ES ET EU EV EW EX EY EZ FA FB FC FD FE FF FG FH FI FJ FK FL FM FN FO FP FQ FR FS FT FU FV FW FX FY FZ GA GB GC GD GE GF GG GH GI GJ GK GL GM GN GO GP GQ GR GS GT GU GV GW GX GY GZ HA HB HC HD HE HF HG HH HI HJ HK HL HM HN HO HP HQ HR HS HT HU HV HW HX HY HZ IA IB IC ID IE IF IG IH II IJ IK IL IM IN IO IP IQ IR IS IT IU IV IW IX IY IZ JA JB JC JD JE JF JG JH JI JJ JK JL JM JN JO JP JQ JR JS JT JU JV JW JX JY JZ KA KB KC KD KE KF KG KH KI KJ KL KM KN KO KP KQ KR KS KT KU KV KW KX KY KZ LA LB LC LD LE LF LG LH LI LJ LK LL LM LN LO LP LQ LR LS LT LU LV LW LX LY LZ MA MB MC MD ME MF MG MH MI MJ MK ML MN MO MP MQ MR MS MT MU MV MW MX MY MZ NA NB NC ND NE NF NG NH NI NJ NK NL NM NO NP NQ NR NS NT NU NV NW NX NY NZ OA OB OC OD OE OF OG OH OI OJ OK OL OM ON OO OP OQ OR OS OT OU OV OW OX OY OZ PA PB PC PD PE PF PG PH PI PJ PK PL PM PN PO PP PQ PR PS PT PU PV PW PX PY PZ QA QB QC QD QE QF QG QH QI QJ QK QL QM QN QO QQ QR QS QT QU QV QW QX QY QZ RA RB RC RD RE RF RG RH RI RJ RK RL RM RN RO RP RQ RR RS RT RU RV RW RX RY RZ SA SB SC SD SE SF SG SH SI SJ SK SL SM SN SO SP SQ SR SS ST SU SV SW SX SY SZ TA TB TC TD TE TF TG TH TI TJ TK TL TM TN TO TP TQ TR TS TT TU TV TW TX TY TZ UA UB UC UD UE UF UG UH UI UJ UK UL UM UN UO UP UQ UR US UT UU UV UW UX UY UZ VA VB VC VD VE VF VG VH VI VJ VK VL VM VN VO VP VQ VR VS VT VU VW VX VY VZ WA WB WC WD WE WF WG WH WI WJ WK WL WM WN WO WP WQ WR WS WT WU WV WW WX WY WZ XA XB XC XD XE XF XG XH XI XJ XK XL XM XN XO XP XQ XR XS XT XU XV XW XX XY XZ YA YB YC YD YE YF YG YH YI YJ YK YL YM YN YO YP YQ YR YS YT YU YV YW YX YY YZ ZA ZB ZC ZD ZE ZF ZG ZH ZI ZJ ZK ZL ZM ZN ZO ZP ZQ ZR ZS ZT ZU ZV ZW ZX ZY ZZ																										A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA AB AC AD AE AF AG AH AI AJ AK AL AM AN AO AP AQ AR AS AT AU AV AW AX AY AZ BA BB BC BD BE BF BG BH BI BJ BK BL BM BN BO BP BQ BR BS BT BU BV BW BX BY BZ CA CB CC CD CE CF CG CH CI CJ CK CL CM CN CO CP CQ CR CS CT CU CV CW CX CY CZ DA DB DC DE DF DG DH DI DJ DK DL DM DN DO DP DQ DR DS DT DU DV DW DX DY DZ EA EB EC ED EE EF EG EH EI EJ EK EL EM EN EO EP EQ ER ES ET EU EV EW EX EY EZ FA FB FC FD FE FF FG FH FI FJ FK FL FM FN FO FP FQ FR FS FT FU FV FW FX FY FZ GA GB GC GD GE GF GG GH GI GJ GK GL GM GN GO GP GQ GR GS GT GU GV GW GX GY GZ HA HB HC HD HE HF HG HH HI HJ HK HL HM HN HO HP HQ HR HS HT HU HV HW HX HY HZ IA IB IC ID IE IF IG IH II IJ IK IL IM IN IO IP IQ IR IS IT IU IV IW IX IY IZ JA JB JC JD JE JF JG JH JI JJ JK JL JM JN JO JP JQ JR JS JT JU JV JW JX JY JZ KA KB KC KD KE KF KG KH KI KJ KL KM KN KO KP KQ KR KS KT KU KV KW KX KY KZ LA LB LC 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YC YD YE YF YG YH YI YJ YK YL YM YN YO YP YQ YR YS YT YU YV YW YX YY YZ ZA ZB ZC ZD ZE ZF ZG ZH ZI ZJ ZK ZL ZM ZN ZO ZP ZQ ZR ZS ZT ZU ZV ZW ZX ZY ZZ																										A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA AB AC AD AE AF AG AH AI AJ AK AL AM AN AO AP AQ AR AS AT AU AV AW AX AY AZ BA BB BC BD BE BF BG BH BI BJ BK BL BM BN BO BP BQ BR BS BT BU BV BW BX BY BZ CA CB CC CD CE CF CG CH CI CJ CK CL CM CN CO CP CQ CR CS CT CU CV CW CX CY CZ DA DB DC DE DF DG DH DI DJ DK DL DM DN DO DP DQ DR DS DT DU DV DW DX DY DZ EA EB EC ED EE EF EG EH EI EJ EK EL EM EN EO EP EQ ER ES ET EU EV EW EX EY EZ FA FB FC FD FE FF FG FH FI FJ FK FL FM FN FO FP FQ FR FS FT FU FV FW FX FY FZ GA GB GC GD GE GF GG GH GI GJ GK GL GM GN GO GP GQ GR GS GT GU GV GW GX GY GZ HA HB HC HD HE HF HG HH HI HJ HK HL HM HN HO HP HQ HR HS HT HU HV HW HX HY HZ IA IB IC ID IE IF IG IH II IJ IK IL IM IN IO IP IQ IR IS IT IU IV IW IX IY IZ JA JB JC JD JE JF JG JH JI JJ JK JL JM JN JO JP JQ JR JS JT JU JV JW JX JY JZ KA KB KC KD KE KF KG KH KI KJ KL KM KN KO KP KQ KR KS KT KU KV KW KX KY KZ LA LB LC LD LE LF LG LH LI LJ LK LL LM LN LO LP LQ LR LS LT LU LV LW LX LY LZ MA MB MC MD ME MF MG MH MI MJ MK ML MN MO MP MQ MR MS MT MU MV MW MX MY MZ NA NB NC ND NE NF NG NH NI NJ NK NL NM NO NP NQ NR NS NT NU NV NW NX NY NZ OA OB OC OD OE OF OG OH OI OJ OK OL OM ON OO OP OQ OR OS OT OU OV OW OX OY OZ PA PB PC PD PE PF PG PH PI PJ PK PL PM PN PO PP PQ PR PS PT PU PV PW PX PY PZ QA QB QC QD QE QF QG QH QI QJ QK QL QM QN QO QQ QR QS QT QU QV QW QX QY QZ RA RB RC RD RE RF RG RH RI RJ RK RL RM RN RO RP RQ RR RS RT RU RV RW RX RY RZ SA SB SC SD SE SF SG SH SI SJ SK SL SM SN SO SP SQ SR SS ST SU SV SW SX SY SZ TA TB TC TD TE TF TG TH TI TJ TK TL TM TN TO TP TQ TR TS TT TU TV TW TX TY TZ UA UB UC UD UE UF UG UH UI UJ UK UL UM UN UO UP UQ UR US UT UU UV UW UX UY UZ VA VB VC VD VE VF VG VH VI VJ VK VL VM VN VO VP VQ VR VS VT VU VW VX VY VZ WA WB WC WD WE WF WG WH WI WJ WK WL WM WN WO WP WQ WR WS WT WU WV WW WX WY 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BC

Air afterglow and thermal radiation of nitrogen peroxide. V. KONDRATYEV (Fizikal. Z. Soviet-union, 1937, 11, 330-325).—The spectrum of the air afterglow is identical with the thermal emission spectrum of NO₂ at 4000-6400 Å., indicating that the carrier of the afterglow is the NO₂ mol. An attempt is made to systematize the thermal emission spectrum of NO₂. F. J. L.

Zhur-Fiz. A-1

A.S.M. S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS																										PROCESSES AND PROPERTIES INDEX																																																																																																																																	
<p><i>Be</i></p> <p><i>A-1</i></p> <p>Spectroscopy of hydroxyl. V. N. KONDRATYEV (Bull. Acad. Sci. U.R.S.S., 1958, Ser. Phys., 371—373).—The calc. val. of the intensities of OH bands agree satisfactorily with experiment. The average life of excited OH can be calc. and hence the order of the probability val. of the quenching of the fluorescence of OH. A. J. M.</p> <p><i>vest. AN SSSR, Ser. F.</i></p>																																																																																																																																																											
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1ST AND 2ND OBJECT		PROCESSES AND PROPERTIES INDEX		3RD AND 4TH OBJECTS	
<p><i>Ca</i></p> <p>The mechanism of the recombination of OH radicals in the electric discharge. V. Kondrat'ev. <i>Acta Physicochim. U. R. S. S. R.</i> 315-22(1958)(in English). It is shown that the most probable process governing the destruction of OH radicals in the zone of an elec. discharge in water vapor is $2OH + M = H_2O_2 + M$. The calcd. value of the OH recombination const. agrees satisfactorily with the measured value. The fact that it is impossible to observe H_2O_2 formed as a result of the recombination of OH is attributed to secondary reactions between H_2O_2 and either H or OH, leading to its decompn. A. A. Vernon</p>					
<p>ASB-156 DETAILING LITERATURE CLASSIFICATION</p>					
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1ST AND 2ND EDITIONS										PROCESSING AND PROPERTY INDEX										3RD AND 4TH EDITIONS									
<div style="position: absolute; top: 10px; left: 10px; font-size: 40px; font-weight: bold;">SA</div> <div style="position: absolute; top: 10px; right: 10px; font-size: 40px; font-weight: bold;">1530</div> <div style="position: absolute; top: 350px; left: 250px; width: 80%; text-align: center;"> <p>2948. Influence of Moisture on the Intensity of the Visible Radiation of the Flame of CO and O₂. H. Kondratyeva and V. Kondratyev. <i>Acta Physicochimica</i>, 5, 4, pp. 481-490, 1950. In English.</p> <p>The light yield in the visible part of the spectrum of the flame of $2CO + O_2$ has been measured as a function of the amount of water vapour contained in the reaction mixture. It has been shown that the light yield decreases rapidly with increase of the partial pressure of water vapour. It is suggested that the observed effect is due to a continuous change in the oxidation mechanism. It is suggested that water plays a twofold role: as the initiator of the reaction chain and as a participator in the latter (as OH radicals and H atoms). From a comparison of the rates of oxidation of CO and conversion of the water gas an estimate is obtained for the average length of a chain. [See also Abstracts 3179 and 3963 (1967).]</p> </div>																													
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1ST AND 2ND ORDERS		PROCESSES AND PROPERTIES INDEX		180 AND 2TH ORDERS	
<div style="position: absolute; top: 10px; left: 10px;">B</div> <div style="position: absolute; top: 10px; right: 10px;">A-1</div> <div style="position: absolute; top: 300px; left: 300px;"> <p>Carbon monoxide-oxygen flame. IV. Influence of moisture on the intensity of the visible luminosity of the flame. E. KONDRATIEVA and V. KONDRATIEVA. J. Phys. Chem. Russ., 1936, 11, 231-237. — In presence of H₂O vapour (e.g., 1 mm. (H₂) of H₂O for 30 mm. CO and 30 mm. O₂) CO is oxidized more completely but the luminosity of the flame is lowered. This decrease of the luminosity is too great for interpretation as due to extinction of luminous rays; it reveals the reaction CO + H₂O = CO₂ + H₂.</p> <p style="text-align: right;">Zhuo. Fiz. Khim.</p> <p style="text-align: right;">J. J. B.</p> </div>					
<div style="display: flex; justify-content: space-between;"> 458.15A METALLURGICAL LITERATURE CLASSIFICATION FROM 17000000 </div>					
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LIST AND INDEX CONTAINS																									
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<p>4</p> <p>Absorption spectrum and life of the carbon sulfide radical. V. Kondrat'ev. <i>Compt. rend. acad. sci. U. R. S. S. 20, 547-8(1938)</i> (in English).—The gas drawn from a discharge tube filled with sulfur vapor in contact with petrolatum gave a series of bands ascribed to the CS radical. The observed band-heads (λ in Å.) were: 2373.3, 2500.3, 2444.0, 2383.7, 2505.5 and 2387.8, the last two being from less intense bands. Under the exptl. conditions (0.05 mm. pressure and room temp.) the av. life of the CS radical is of the order of several minutes.</p> <p>George Ayres</p> <p>DATE INDEXED</p>																									
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<p><i>BC</i> <i>A 1</i></p> <p>Mechanism of the recombination of the hydroxyl radical in the electric discharge through water vapour. V. KONDRATYEV (Acta Physicochim. U.R.S.S., 1969, 20, 791-804).—In the electrical discharge through H₂O vapour OH radicals disappear to about an equal extent by the two processes:</p> <p>$2OH + M \rightleftharpoons H_2O_2 + M$, and $OH + H + M \rightleftharpoons H_2O + M$. At high temp. the reaction $OH + H \rightleftharpoons H_2 + O$ also occurs and becomes predominant above 300°.</p> <p style="text-align: right;">O. J. W.</p> <p><i>Lab. Elementary Processes, Inst. Chem. Phys., Leningrad</i></p>																									
<p>ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																									

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES UNDER INVESTIGATION

Investigation of the flame of carbon monoxide and oxygen. VI. Photochemical oxidation of carbon monoxide near the region of self-ignition. H. Kondrat'eva and V. Kondrat'ev. *Acta Physicochim. U. R. S. S. 10*, 151-15 (1955) (in English); *Ch. C. A. 25*, 4823. At 234-400° and 80 mm. pressure, by a streaming method, the rate of the reaction $\text{CO} + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{CO}$ (excess) in a quartz vessel illuminated by an Al spark in practically constant, but rises rapidly between 442 and 490° (self-ignition some 90 mm. at 490°, 70 at 442, 40 at 420, none at 410°). From the values of $\gamma = \%$ CO_2 formed in the table, and assuming that the increased reaction rate is due to a chain reaction, the length of the chains is 2 at 400, 3 at 430, 5 at 450, 16 at 442 and 490° at 490°. The dark reaction is approx. 8.5 times the photochem. reaction. The partial pressures of the active centers are, resp., 0.048 and 0.0025 mm./sec. Practically no ozone was found under the expl. conditions used. F. H. R.

Lab. Elementary Processes, Inst. Chem. Phys., Leningrad

ASB-35A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND COVER										PROCESS AND PROPERTIES INDEX										3RD AND 4TH COVER									
BC																				A-1									
<p>Carbon monoxide-oxygen flame. V. Influence of temperature on the yield of visible light of a flame of $200 + O_2$. E. KONDRATIEVA and V. KONDRATIEV (J. Phys. Chem. Russ., 1939, 13, 168-173; cf. A., 1938, 1, 577).—The temp. of the flame or the rate of burning between 700° and 1000°. The yield of light increases with the % p of CO occupying the combustion. When p is high (e.g., 90%) the yield is independent of temp.; it diminishes with rising temp. at p = <80%. This decrease cannot be attributed to a quenching effect of CO, as CO₂ is less effective than O₂. J. J. B.</p> <p>Zhu.Fiz.Khim.</p>																													
<p>ASH-STA METALLURGICAL LITERATURE CLASSIFICATION</p>																													
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117 AND 118 SERIES

PROCESSES AND PROPERTIES INDEX

Spectroscopic study of the intermediate substances formed during the oxidation of hydrogen gas, carbon monoxide and carbon disulfide. V. Kondratyev, Bull. mensuels et carbon disulfide. V. Kondratyev, Bull. mensuels, vol. U. R. S. S., Classe sci. chim. 1940, 801-8 (in English, 809).—The inability of most of the intermediate substances formed in the reaction zone made it impossible to use ordinary chem. methods for the analysis and identification of these substances. The OH radical was detected in the flame of H by the spectroscopic method of analysis (the method of linear absorption). The origin of OH in the flame zone is chem., and the radical plays a definite role in the oxidation of H. An inevitable consequence of its presence in the flame is the formation of most active intermediate substances formed during the reaction. H_2O_2 was detected in the zone of the oxidation of H. It is formed as a result of primary chem. processes and, then, it acts as an intermediate substance. The concentration of OH in humid gases, of CO exceeds considerably the equal. concn. of this radical at the temp. of the flame. The rates of $OH + CO = CO_2 + H$ and the total rate of burning of CO are of the same order of magnitude. The radicals CS , CS and CO were detected by the spectroscopic method in the oxidation of CS_2 . 25 references. W. R. Hays

VEST. AN SJJR, See Khim

Lab. Elem. Process, Inst. Chem. Phys. -

ASD-56A METALLURGICAL LITERATURE CLASSIFICATION

FROM SYNONYM

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REVIEWED HAS DIV 501

KONDRAT' YEV, V.N.

C/A

3

Vest-AN SSSR.
Ser. Fiz

Spectrum of the CS radical. V. N. Kondrat'ev. *Bull. Acad. Sci. U. R. S. S., Ser. phys.* 4, 71-7 (1940). Ed. C. A. 33, 3697; 35, 679. — According to studies of Crawford and Shureliff (C. A. 28, 6033') the main part of the emission spectrum of the CS radical was interpreted as pertaining to the system $A''1 \rightarrow X'2$, and the addnl. bands to $C'2 \rightarrow B'2$. In the present work, the same bands were found also in the absorption spectrum. The analysis of this spectrum indicated that: (1) C. and S.'s interpretation of $C'2 \rightarrow B'2$ is not correct, and these bands are due not to the transitions $0' \rightarrow 0'$ and $0' \rightarrow 1'$, but rather to $1 \rightarrow 0'$ and $0' \rightarrow 0'$. (2) Term $B'2$ must be identified with the abnormal term $X'2$ of the CS mol. The existence of the absorption spectrum of CS outside of the zone of elec. discharge proves the long life of that radical, several minutes at room temp. and pressure of about 0.01 mm. Hg.

Rokalana Gamow

Inst. Chem. Physics, Leningrad

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000824220002-1"

KONDRAT'YEV, V.N.

Photochemical oxidation of carbon disulfide vapors.
V. N. Kondrat'yev and A. Yakovleva. J. Exptl. Theoret.
Phys. (U. S. S. R.) 10, 1088-92 (1940). --At pressures of
 CS_2 16-55 mm. and of O_2 40-100 mm., at room temps.,
the primary process produced by radiation of 2000 Å.
is a photodissociation of CS_2 molecules to CS radicals and meta-
stable S atoms. The chief final products are SO_2 and
 COS ; the latter undergoes further oxidation under the
same conditions. F. H. Rathmann

Zhuravskiy Fez. Fiz.

ASH & A METALLURGICAL LITERATURE CLASSIFICATION

Investigations of the flame of carbon monoxide and oxygen. VII. The hydroxyl radical in flames of moist carbon monoxide. B. Kondratyuk and V. Kondratyuk. *Acta Physicochim. U. R. S. S. 12, 18(1010) (in English), cf. C. A. 33, 8011.* — From absorption-spectrum measurements, K. and K. find that the partial pressure of OH in moist 1:1 and 1:3 CO-O₂ flames at 10-50 mm. at 810° is about 0.005 mm. Since this is approx. 100 times the equilibrium concentration with respect to H₂O, the OH must be of chain origin and since its rate of formation in the reaction zone is of the same order of magnitude as the rate of combustion, the authors conclude that it must play an important part in the oxidation mechanism, probably as follows: OH + CO = CO₂ + H. Cf. C. A. 34, 324. F. H. R.

Lab. Elementary Processes, Inst. Chem. Phys., Leningrad

KONDRAT'EV, V. N.

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CO

The radiation of the low-temperature flame of carbon disulfide. V. Kondrat'ev. *Acta Physicochim. U. R. S. S. 12*, No. 5, 637-46 (1940) (in English); cf. *C. A.* 35, 364. —The CS_2-O_2 flame radiation is purely chemiluminescent, the ratio of chemiluminescent to thermal radiation for λ 4000 being $10^{11}:1$. The light output increases to a sharp max. as O_2/CS_2 increases through 2.5-3.5 and then decreases almost to zero for $r > 20$; this indicates a change in the reaction mechanism. The max. corresponds to 1 quantum for 40 CS_2 mols., and decreases to about 1 for 130 on increasing the temp. of the reaction-vessel walls from 290 to 370°. F. H. Rathmann

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Lab. Elementary Processes, Inst. Chem. Phys. - Leningrad

KONDRAT'YEV, V.N.

"Studies of the Flames of CO and O₂", Zhur. Fiz. Khim., Vol. 14, No 1, 1940.

Lab. of Elementary Processes, Leningrad Inst. of Chemical Physics.

KONDRAT'YEV, V.N.

Some properties of the free CS radical. V. N. Kondrat'ev and E. Magaziner. *J. Phys. Chem.* (U. S. S. R.), 14, 6, 12 (1940).—By means of a spectroscopic study of the CS radical in mixts. with CS₂ or with S and paraffin oil (V. N. C. A. 33, 3072°) K. and M. found that the av. life of the radical is independent of the pressure and depends only on the material of the walls and the temp. The temp. coeff. of the recombination reaction $2 \text{CS} \rightarrow (\text{CS})_2$ is pos.; the av. life at room temp. is around 10 min., at 100°, 3 min., in the case of glass vessels long exposed to air or washed with KCl; washing with phosphoric acid or heating in vacuo reduces the av. life. At temps. 20–100°, practically no reaction between CS radicals and O₂ takes place. Conclusion: The CS radical has no important part in the development of the reaction chains in the cold CS₂ flame. P. H. Rathmann

1ST AND 2ND SECTORS		3RD AND 4TH SECTORS	
KONDRAT'YEV, V.N.		2	
<p>Distribution of the CS radii in the low-temperature flame of carbon disulfide. V. N. Kondrat'yev, <i>J. Phys. Chem.</i> (U. S. S. R.) 14, 287-30 (1940); <i>J. C. A. S.</i> 58, 287. The flame of CS_2 is grayish-green and contains CS when the concn. ratio $\text{O}:\text{CS}_2 = r$ is less than 2.5; it is bluish violet and free from CS at higher r. In the flame of mixts. with r slightly less than 2.5 at less than 4 mm. the CS concn. is max. below the middle of the flame but is considerable also at its tip. At r slightly greater than 2.5 CS concn. is high at the base of the flame but no CS is present in its upper half. The zone of detectable CS concn. is greater than that of the green coloration of the flame because of the diffusion of CS mole. CS concn. is max. in the brightest zone of the flame. CS has a chem., not a thermal, origin. At $r = 2.5$ the mechanism of the combustion changes. CS concn. was detd. by comparing the absorption by the flame of the radiations 2878.5-2878.7 Å., which is, and 2502.7-2502.1 Å., which is not, absorbed by CS. B. C. P. A.</p>			
Elem. Proc. Lab., Leningrad Inst. Chem. Phys.			
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PROCESSES AND PROPERTIES INDEX																																																			
<p>Formation of CS in the photodissociation of CS₂ and COS. V. Kuznetsov and A. Yakovleva. <i>J. Phys. Chem.</i> (U. S. S. R.) 14, 833-8 (1940). CS radicals were obtained by irradiation of CS₂ or COS in quartz vessels by the light from a hydrogen discharge tube. From the relative contents of CS obtained as measured photometrically, and with the equation $\alpha = \frac{I}{I_0} \left(\frac{N}{N_0} \right)^2$, where N = plate darkening of the band 2570 Å., for various pressures of CS₂ or COS and for different times of irradiation as well as after irradiation ceased, K. and Ya. find that the disappearance of CS obeys the equation $[CS] = [CS]_0 e^{-kt}$ with $k = 2.3 \times 10^{-4}$, and is due to a heterogeneous process involving CS adsorbed on the walls. The coeff. of covering is about 10^{-1} at 10^{-4} (C. A. 35, 626). Indications of a homogeneous reaction leading to CS₂ were given by a band at 2300-2400 Å. F. H. Rathmann.</p>																																																			
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KONDRAT YEV, V.N.																									
CA																									
Photochemical formation of sulfur monoxide. V. N. Kondrat'yev and A. Yakovleva. <i>J. Phys. Chem.</i> (U. S. S. R.) 14, 850-52 (1910).--See C. A. 35, 1702, where the author names are reversed. F. H. Rathmann																									
ASB-55A METALLURGICAL LITERATURE CLASSIFICATION																									
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1ST AND 2ND ORDERS																										PROCESSES AND PROPERTIES INDEX																									
<p>34</p> <p>Radiation of the flame of carbon monoxide and ozone, and the mechanism of this reaction. M. Zatsiorskiy, V. Kuznetsov, and S. Sadushkova. <i>J. Phys. Chem.</i> (U. S. S. R.) 14, 1521-7 (1940). - When a mixt. of CO and O contg. 3.5% of O₃ passes through a quartz tube at atm. pressure, the decompn. of O₃ becomes noticeable at 120-130° and quant. at 250°, but the percentage of CO oxidized is low (0.2-1%) and decreases when the temp. rises; this neg. temp. coeff. is probably due to the low average O₃ concn. at higher temps. The spectrum of the CO + O₃ flame at 160-250° is identical with that of the CO-air flame except that the former shows no OH bands. The luminosity of the flame increases with temp.; if the mol. collisions extinguishing the luminescence are taken into account, it is calcd. that at 150° 1 in 10³ of the CO₂ mols. formed is excited, and at 250° 1 in 20-30. Excited CO₂ mols. can be produced only in the reaction CO + O → CO₂, but ordinary CO₂ is formed also directly from CO and O₃ in a reaction the activation energy of which seems to be about 20 kg.-cal. B. C. P. A.</p>																																																			
<p>Lab. Elem. Proc., Leningrad Inst. Chem. Phys.</p>																																																			
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																																																			
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BC

P-1

Sulfur monoxide. ST Kondratyev and V. Kondratyev
U. Phys. Chem. Russ., 1946, 1A, 1822—1824).—The con-
position (SO_x) of the gas giving rise to the characteristic
absorption spectrum between 2000 and 2200 Å. is proved by
analysis; it agrees with S_2O_2 . From the emission spectrum of
the real SO its absorption spectrum can be approx.
calc.; it is different from that observed. The coeff. of absorp-
tion of S_2O_2 is independent of temp. between -70° and 80° ,
showing that no measurable dissociation to SO takes place.
The spectrum of S_2O_2 appears under conditions which make
formation of SO energetically impossible. This spectrum
cannot be due to S_2 mol. since it is too complicated for a
diat. mol.

J. J. H.

STUDY OF SODIUM MONOSULFIDE BY PHOTOCHEMICAL PROCESSES. A. Yakovleva and V. Komarova: *Acta Physicochim. U. R. S. S.* 13, 241-6 (1940) (in English).— S_2O was obtained by photochem. decomn. of SO_2 in 110-cm tubes at pressures of around 0.5 mm. by illumination with a H-dichroge tube. The effective wave length lies below $\lambda = 2000 \text{ \AA}$, an interposition of H_2O or a KBr soln. prevents S_2O_2 formation. The course of formation of S_2O was followed by means of the absorption above $\lambda = 3140 \text{ \AA}$. The spectrum below 10° contains bands at 3000 + 0.5, 41.3, 77.8, 115.1, 153.8, 193.6 and 234.6 \AA . The formation of S_2O during the illumination of $\text{COS} + \text{SO}_2$ mixts. but not of pure COS by light of $\lambda > 2300$ is due to primary decomn. to $\text{CO} + \text{S}$ followed by $\text{S} + \text{SO}_2 = \text{S}_2\text{O}$. Traces of CS_2 prevent the formation of S_2O by interaction with the long-lived active centers. The $\lambda\lambda$ 2400-3500 region cannot be effective in producing a reaction $\text{SO}_2 + \text{COS} = \text{CO} + \text{S}_2\text{O}$, since the lifetime of SO_2 is too short to account for the effect of CS_2 . T. and K. calc. that the reaction $\text{S} + \text{SO}_2 = 2\text{SO}$ is endothermal with $Q = -29 = 8 \text{ Cal.}$, so that only S_2O and not SO mols. come into question as the carriers of the spectrum.

F. H. Rathmann

Lab. Elementary Processes, Inst.-Chem. Phys. - Leningrad

ASM-364 METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDER										180 AND 4TH ORDER									
PROCESSES AND PROPERTIES WORK																			
2																			
<p>CA KONDRAT'YEV, V.N.</p> <p>Homogeneous oxidation of carbon monoxide. V. N. Kondrat'ev. <i>Uspekhi Khim.</i> 10, 1-18(1941).--Review. Data are given for the conditions of inflammation (temp. pressure and relative concn. of CO, O₂ and H₂O). The mechanism and the Eber-Levin mechanism are discussed and the latter is found to be in better agreement with known exptl. data. P. H. Rathmann.</p>																			
ASS-ILA METALLURGICAL LITERATURE CLASSIFICATION																			
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Ca

Radiation of the $\text{CO} + \text{O}_2$ flame and the mechanism of this reaction. V. Kondrat'ev, S. Solov'yova and M. Zaslavskiy. *Acta Physicochim. U. R. S. S. 14, 667* (1941) (in English). - See C. A. 36, 54134. F. H. R.

ASAC-SLR METALLURGICAL LITERATURE CLASSIFICATION

2. 1760

Thermal decomposition and oxidation of sulphur monoxide. R. Kondratova and V. Kondratov (*J. Phys. Chem. Russ.*, 1941, 15, 721—738).—The decomp. of S_2O_2 at 84—144° is a chain reaction, one of more stages of which take place at the walls of the vessel. The velocity rises exponentially with rising temp., and is independent of $[\text{S}_2\text{O}_2]$. The activation energy is 30 kg.-cal. In presence of O_2 the process is represented thus: $2\text{S}_2\text{O}_2 \rightarrow 2\text{SO}_2 + \text{S}_2$; $\text{S}_2 + \text{O}_2 \rightarrow 2\text{SO}$. $\text{SO} + \text{S}_2\text{O}_2 \rightarrow \text{SO}_2 + \text{S}_2$; $\text{SO} + \text{SO}_2 \rightarrow 2\text{SO}_2$. R. T.

Zhu-Fu-Khien

B. Abo

14.5.8. Reaction

Studied oxidation of aniline monoxide. N. Mandelstam and V. Kuznetsov (Soviet Acad. Sci. U.S.S.R., 1941, 82, 180).— Measurements at 2–12 atm. pressure, of the oxidation velocity determined by the rate of disappearance of the absorption spectrum as a function of O_2 pressure in the temp. range 84–144° show that the reaction velocity rises rapidly with O_2 pressure and becomes immeasurable at the crit. pressure. The measured crit. pressures satisfy the equation $p_c = 0.46 \times 10^{-4} T^{1.5}$ mm. Hg. If O_2 is forced in at $p > p_c$, there is a slight blue flash lasting a few sec. Near p_c , an induction period lasting ~2 min. at the lowest temp. was observed. Results show that the oxidation is a chain reaction and that the

Dokl. AN SSSR

chains have few branches; p_c corresponds to the lower ignition limit. N. M. B.

Photochemical oxidation of carbonyl sulphide. A. N. Kondratyev,
(Acta Physicochim. U.R.S.S., 1947, 10, 272-281). Mixtures of
COS vapour and O_2 were illuminated with light, from a H discharge
tube, of $\lambda > 2300 \text{ \AA}$. Determinations were made from room temp.
to 100° with mixtures of different compositions and pressures (12-46
mm.), and with different intensities of radiation. The mechanism of
the reaction is considered to be: $COS + h\nu \rightarrow CO + S$; $S + COS \rightarrow$
 $CO + S_2$; $S_2 + O_2 \rightarrow SO_2 + S$; $S + SO_2 \rightarrow S_2O_2$; $S_2O_2 \rightarrow$ (wall) $SO_2 +$
 S . It was found that $[SO_2] = k_2 \sqrt{I_0} e^{-k_1 t}$, where k_1
is const., I_0 = intensity of discharge, and t = time of irradiation.
A. J. M.

Lab. Elem. Proc., Inst. Chem. Phys.,

[illegible]

Reaction of water-gas conversion in quartz vessels. V. Kon-
dratsev and M. Ziskin (*Acta Physicochem. U.R.S.S.*, 1943, 18, 197—
309).—The rate of reaction of $\text{CO}_2\text{-H}_2$ mixtures on passing through
heated SiO_2 tubes is not governed by the reaction time but by the
surface area of the reaction tube, a large area having an inhibiting
effect. The amount of H_2 transformed into H_2O (y) increases with
temp. according to an exponential law, but equilibrium is far from
being attained at 800° . A reaction scheme based on the assumption
of catalytic activity on the part of O_2 is proposed, and it follows
from calculations that $y_{\text{exp.}} \propto e^{-(E_1 - 10000/T)}$, where E_1 and E_2
are the respective activation energies of stages $\text{H} + \text{CO}_2 \rightarrow \text{CO} +$
 OH and $\text{O}_2 + \text{H}_2 \rightarrow 2\text{OH}$.
C. R. H.

KONDRAT' YEV, V.N.		PROCESSES AND PREPARED BY	
<p><i>[Handwritten signature]</i></p> <p>Spectroscopic study of gaseous chemical reaction. V. N. Kondrat'ev. <i>Abad. Vuzh S.S.S.R., Inst. Khim. Fiz. Moskva 1964, 80 pp.</i>—Review of the application of spectroscopic methods to the study of various gas reactions, including the oxidations of H, CO, C₂H₂, and various S compounds. 82 references. G. M. Kosolapoff</p>		<p><i>[Handwritten signature]</i></p>	
<p>ASB. SLA METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>13041 034177</p>			

KONDRAI YEV, V.N.

Combination of O-CO mixtures in quartz vessels. V.N. Kondrai, J. Phys. Chem. (U.S.S.R.), 8, 110-14 (1967). When an oxidized, moist. of O_2 and CO contg. little H_2O or H_2O and CO is passed through a quartz tube at 450-700°, the percentage p of CO emitted is low (often less than 1%) and independent of the length of the tube (15-30 cm.). When the moist. is passed through 2 tubes, the amount of which is least at 700°. p in the first tube increases with its temp. (450-600°), but p in the second tube simultaneously diminishes so that the total p remains nearly constant. The reduction of p in the second tube is not due to poisoning of a poison in the first, as no poison could be broken out between the 2 tubes. It is most due to loss of H_2 through heated quartz, as this diffusion was measured and found too small. It must be due to trapping of water molecules in the vessel, as addn. of water to the moist. between the tubes raises p in the second tube; about 70 mole. of CO_2 are produced per l H_2O . The trapping is not a simple absorption, as it does not occur in the absence of combination.
J. I. Silbermann

Zhu-Fiz.Khim. 2

ASR-SLA METALLURGICAL LITERATURE CLASSIFICATION
VOLUME NUMBER 10197 ONE DIV 101

1ST AND 2ND SECTORS										3RD AND 4TH SECTORS									
PROCESS AND PROPERTIES INDEX																			
<p>CA</p> <p>Mechanism of oxidation of sulfur monoxide. B. Kondrat'eva and V. Kondrat'ev. J. Phys. Chem. (U.S.S.R.) 18, 102-108 (1944); cf. C.A. 37, 820. Oxidation of SO by an excess of O₂ gives S (about 60% at all temps.), SO₂ (25-10% at 85-140°), and SO₃ (15-30% at 85-140°). The min. pressure of ignition is 84 mm. at 22° and 2 mm. at 180°. At lower temp. an induction period is observed. Often a glow is seen. A mechanism of reaction is postulated; SO₂ is supposed to retard the oxidation. B.A.</p> <p>2</p>																			
AIR-SEA METALLURGICAL LITERATURE CLASSIFICATION																			
MATERIALS INDEX										PROPERTY INDEX									
1ST AND 2ND SECTORS										3RD AND 4TH SECTORS									

PROCESSING AND PREPARATION INDEX

A-18

BC

Combustion of carbon-carbon monoxide mixtures in quartz vessels.
V. N. Mondrashev (*J. Phys. Chem. Russ.*, 1944, 18, 110-114).—
When mixtures of O_2 and CO burn in a quartz tube in presence of
 H_2O as catalyst, H_2O is consumed, probably adsorbed on the walls.
Therefore the yield of CO_2 cannot be raised by increasing the time of
contact of O_2 and CO, but is improved by adding H_2O to the ex-
hausted mixture; 1 mol. of H_2O added causes formation of 70 mols.
of CO_2 (at 600°).
J. J. B.

METALLURGICAL LITERATURE CLASSIFICATION

SIGNATURE		AUTHOR		TITLE		SUBJECT		CLASSIFICATION		INDEXING	
1	2	3	4	5	6	7	8	9	10	11	12

BC

TEMPERATURE DEPENDENCE OF THE LOWER LIMIT OF IGNITION OF HYDROGEN
FROM SPECTROSCOPIC MEASUREMENTS OF HYDROGEN. V. KONDRAKOV
(Compt. rend. Acad. Sci. U.R.S.S., 1944, 44, 20-25).—Avramenko's
measurements of absorption by OH in H_2 flames at low pressure
(A., 1944, 1, 178) are used to derive an expression for the lower limit
 ϕ_0 of ignition of H_2 in agreement with Nalbandjan's experimental
data (Thesis, 1945); the val. of E_1 in the expression $\phi_0 = a \cdot e^{E_1/RT}$
is computed as 11,000 g.-cal. L. J. J.

Doc. AN SSSR

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS		PROCESS AND PROPERTIES INDEX		3RD AND 4TH ORDERS	
<p>CA KONDRA'T' YEV, V.N.</p>		<p>Heat decomposition of hydrogen peroxide vapor. E. Kondrat'eva and V.N. Kondrat'ev. <i>J. Phys. Chem. (U.S.S.R.)</i> 19, 178-80 (1945). Moist air contg. 0.01-0.4 mm. Hg of H_2O_2 is passed through a glass tube. At room temp. there is no decompos. If the last liquid used to rinse the tube has been water or HNO_3; if $Cu(NO_3)_2$ or KCl was used, a decompos. takes place. At 150° H_2O_2 is decompd. also in clean tubes. At a const. rate of air current the surviving amt. of H_2O_2 is nearly independent of its original vapor pressure. That is considered to show that the reaction is bimol. The energy of activation calcd. from the temp. coeff. between 23° and 175° is 7.6-9.5 kg.-cal. per mole.</p> <p>J. J. Bikerman</p>		<p>Zhur. Fiz. Khim. 2</p>	
<p>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</p>					
<p>SEARCHED INDEXED</p>		<p>SEARCHED INDEXED</p>		<p>SEARCHED INDEXED</p>	

107 AND 100 CODES		PRINCIPLES AND PROPERTIES INDEX		100 AND 100 CODES	
<p>1261. MEASUREMENT OF THE IGNITION LIMITS BY THE JET METHOD. Kondratiev, V. N. (Compt. rend. acad. sci. U.S.S.R., 1946, 49, 116-118). Determination of the pressure limits of ignition in a flow of combustible gas by the appearance of flame is not always reliable because close to the lower ignition limit radiation from certain flames is very small. The author describes a more reliable method, based on pressure measurements, which may be applied to reactions involving a volume change. The temperature of the gas mixture passing through the reaction vessel is gradually raised and the pressure remains constant until the ignition temperature corresponding to this pressure is reached after which it rapidly falls off.</p>					
B.C.U.R.A.					
A.S. 11.1 METALLURGICAL LITERATURE CLASSIFICATION					
107 AND 100 CODES		100 AND 100 CODES		100 AND 100 CODES	

KONDRATIEV, V. N.

PA 4T65

USSR/Physical Chemistry - Combustion
Carbon monoxide

1945

"Shift in the Ignition Limits for Carbon Monoxide with
Small Admixtures of Hydrogen," V. N. Kondratiev,
4 pp

"CR Acad Sci" Vol XLIX, No 1

A mathematical investigation, based on the mechanics
of carbon-monoxide combustion, of the effect previous-
ly reported by M. Ashkinazi of the Institute of Chemi-
cal Physics, where admixture of a few hundredths of a
percent of hydrogen lowered the lower limit and raised
the upper limit of ignition of an oxygen mixture of
carbon monoxide.

4T65

KOND RAT YEV, V.N.										21									
<p> $OH + A = H_2O + R_1$, $R_1 + O_2 = O + \dots$, $R_2 + O_2 = R_3 + \dots$, $R_3 + A = R_4H + R_1$, $O + A = OH + R_1$, and $R + wall \rightarrow adsorbed R$. R is an indefinite, and R_1, R_2, and R_3 are definite, radicals. The chains are broken by adsorption of radicals on the wall of the reaction vessel; as very active radicals are likely to react before reaching the wall, the adsorption and deactivation affect chiefly less-active radicals. OH, O, and H are consumed rapidly and are not markedly adsorbed; their concn. in the vol. of hydrocarbon flame is nearly stationary. The theory predicts an approximate proportionality between the av. concn. of OH in the flame and the av. rate of reaction. Avramenko's expts. (C.A. 37, 6529) on combustion of C_4H_8 agree with this prediction. The relation between the low ignition limit, gas compn., and temp., when detd., will make possible a more thorough test of the theory. </p>										<p>Zhur-Fiz. Khim.</p>									
Inst. Chem. Phys. - AS USSR																			
ASTM-SLA METALLURGICAL LITERATURE CLASSIFICATION																			

Y
KONDRAT'EV, V. N.

Chemical mechanism of the reaction of hydrogen combustion. V. N. Kondrat'ev (Inst. Chem. Phys., Acad. Sci. U.S.S.R., Moscow). *J. Phys. Chem. (U.S.S.R.)* 20, 1231-7 (1946) (in Russian).—A mechanism of combustion of H₂, derived from the kinetics of this reaction, was confirmed experimentally by an approx. detn. of the concns. of OH (cf. *C.A.* 31, 6523⁹) and of H atoms (cf. *C.A.* 40, 5613⁹; 41, 1532i). J. J. Birkman

KONDRAT YEV, V. 18.

11T AND 14T_000523

PROCESSES AND PROPERTIES INDEX

Catalytic recombination of active centers and its application for determining their concentration in the reaction zone. E. I. Kopylov and V. V. Kondratyev. *Chem. Phys. Acad. Sci. U.S.S.R. (Moscow)*. *Phys. Chem. U.S.S.R.* 59, 1330-47 (1975) *Engl. transl.* *C.A.B.* 40, 5613; 41, 1534. The temp. increase of a catalytic monocrystal coated with ZnO and kept in a H_2-O_2 flame shows that the rate of adsorption of H atoms by the walls is almost independent of the temp. between 800° and 1000° abs. J. I. Rikerman

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KONDRATIEV, V. *N.*

USSR/Chemistry - Hydrogen, Flames of
Chemistry - Hydrogen, Atomic *ye I.*

Jul/Aug 1946

"Hydrogen Atoms in Hydrogen Flames," H. Kondratieva, V. Kondratiev, Inst Chem Phys,
Acad Sci USSR, Moscow, 12 pp

"Acta Physicochimica URSS" Vol XXI, No 4

Measurements of H atom in hydrogen flames burning in $4H_2+O_2$, $2H_2+O_2$, H_2+O_2 , H_2+4O_2
mixtures by thermoelectric probe method. Results agree quantitatively with assumed
mechanism of hydrogen combustion. Received 3 Dec 1945.

PA 5211

1ST AND 2ND COLUMNS										3RD AND 4TH COLUMNS									
KONDRAT YEV, V.V.										2									
<p>Detection and concentration measurements of hydrogen atoms in hydrogen flames. V. N. Kondrat'ev and E. I. Kondrat'eva. <i>Compt. rend. acad. sci. U.R.S.S.</i> 51, 607-8 (1946).—A thermocouple test method using a thermocouple covered with $\text{ZnO} \cdot \text{Cr}_2\text{O}_3$ as catalyst was used for measuring the concn. of H atoms. With a precision of 1% in temp. measurements, the sensitivity in detg. H-atom concn. is 0.05%.</p> <p style="text-align: right;">J. A. Ackerman</p>																			
<p>ASB-55A METALLURGICAL LITERATURE CLASSIFICATION</p>																			
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RECORDS 1-2, 4-10.

USSR/Physics

Mar/Apr 1948

Atomic Structure

Molecular Structures

"Review of 'Structure of Atoms and Molecules' by V. N. Kondrat'yev," M. V. Vol'kenshteyn, 2½ pp

"Izvest Akad Nauk SSSR, Otd Khim. Nauk" No 2

This book meets requirements of growing interest by Soviet reading public in field of structure of matter. Book is too basic and general to be used as a text for scientific students or technicians. Published in Moscow and Leningrad 1946.

6792

1ST AND 2ND CIPHERS										3RD AND 4TH CIPHERS									
PROCESSES AND PROPERTIES INDEX																			
B.										19									
<p>The Mechanism of Cold-Flame Combustion. (In Russian.) V. Kondrat'ev, L. Kartlova, and E. Kondrat'ev. <i>Zhurnal Fizicheskoi Khimii</i> (Journal of Physical Chemistry), v. 22, May 1948, p. 561-564.</p> <p>Investigates the above by the thermoelectric method. On the basis of tabulated and charted data, it is indicated that the H atom, even if present in the zone of the cold flame, does not have as great an importance as in the mechanism of hot-flame combustion.</p>																			
Inst. Chem. Phys. - AS USSR																			
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION																			
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- N
535. Interaction between Neutrons and Nuclei by V M Kondratyev Uspekhi
Fiz Nauk 34 169-261 (1948) Feb (In Russian)

In the "Introduction" neutron reactions are surveyed and the conception of "cross section" is defined. Chapter I, "Theory of nuclear reactions", gives Weiskopf's deduction of dispersion formulas for cross sections of nuclear processes, based on wave-mechanical considerations, and a discussion of Weiskopf and Wigner's formula covering the cases of interaction between rapid neutrons and heavy nuclei. Chapter II, "Methods for measuring cross sections." Chapter III, "Experimental data." Survey of characteristic features of the cross sections of different elements, in their relation to the energy of the acting neutrons. This is followed by an extensive table for all elements, giving scattering and absorption cross sections, sources of neutrons, and their energies. (93 pages of which 61 is a table of cross sections).

KONDRAT'YEV, V. N.

PA 37/49T11

USSR/Chemistry - Combustion
Chemistry - Spectroscopy

Nov 48

"The Division of Active Centers of Reaction in the
Combustion Zone," V. N. Kondrat'yev, 8 pp

"Uspekhi Fiz Nauk" Vol XXVI, No 3

Describes method permitting experimental observation
of chemical processes in flames by using system in-
volving absorption spectroscopy. Refers to several
articles author has had published. Includes various
graphs of data obtained by mathematical formulas
which are explained.

37/49T11

117 AND 120 CODES		118 AND 119 CODES	
PRECISE AND PROPERTIES INDEX			
S KONDRAT YEV, V.N.		18	
<p>CONCERNING THE TABLE RELATING TO THE FOLDI APPARATUS. V.N. Kondratyev. (Zavodskaya Laboratoriya, 1949, vol. 15, Apr., pp. 472-473). (in Russian) The calculation of results using the tables provided with the Foldi hard- ness tester is shown to give, in some cases, errors of 20%.—S.k.</p>			
METALLURGICAL LITERATURE CLASSIFICATION			
117 AND 120 CODES		118 AND 119 CODES	
117 AND 120 CODES		118 AND 119 CODES	

1ST AND 2ND COORDS										3RD AND 4TH COORDS									
PROCESSING AND PROPERTY INDEX																			
N										8									
KONDRAT'YEV, V.N.																			
<p>754 Energy Levels of Atomic Nuclei. V.M. Kondrat'ev. <u>Uspekhi Fiz. Nauk</u> 38, 153-221(1946)(in Russian).</p> <p>In this review of literature on energy levels of atomic nuclei (250 references), a short introduction shows the inadequacy of present-day theories in their attempt to account for the quantitative aspects of the problem; the following section is an enumeration of principles of different experimental methods leading to the determination of energy levels; the work ends with an extensive table of energy levels of various nuclei, compiled from data published before January 1, 1946.</p>																			
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION																			
FROM ITINERARY										FROM JOURNAL									
1ST AND 2ND COORDS										3RD AND 4TH COORDS									
1ST AND 2ND COORDS										3RD AND 4TH COORDS									

KONDRAT'EV, V. N.

1220. Kondrat'ev, G. M., Application of the theory of regular cooling of a two-component sphere to the determination of heat conductivity of poor heat conductors (method, "sphere in a sphere") (in Russian), *Iz. Akad. Nauk SSSR Otd. tekhn. Nauk* no. 4, 536-542, Apr. 1950.

Bicalorimeter is a spherical body formed by a spherical kernel of metal which is surrounded by a concentric layer of poor heat conductor (thermic insulator). Mathematical theory of heat conduction in such solids is well known. If one can calculate with an infinite film-transfer factor between the kernel and the insulating layer, the theory gives simple results suitable for experimental determination of thermal conductivity of the insulator.

The paper deals with two modifications of the "sphere-in-sphere" method. Both of them are very intuitive and can be accomplished without expensive and complicated mechanism. For this reason, reviewer recommends them to physicists and engineers. The second modification especially is very important for the following two advantages: (a) The determination of the thermal conductivity of the insulator can be accomplished without knowledge of its thermometric conductivity. (b) The dimensions of the bicalorimeter can be chosen in such a way that results of sufficient physical and technical exactness can be obtained with even an approximate knowledge (or only with an estimate) of the specific heat of the insulator. V. Vodicka, Czechoslovakia

7-1-1

12. Ak. Nauk SSSR,
Otdel. Tekh. Nauk

27

B KONDRAT' YEV, V-IV.

4291* Radicals in Chain Reactions. (In Russian.) V. V. Voevodskii and V. N. Kondrat'ev. *Uspekhi Khimii* (Progress in Chemistry), v. 19, Nov.-Dec. 1950, p. 673-696.

On the basis of the literature, the above was studied from the point of view of classification of elementary reactions according to their role in the chain process. 45 ref.

CONDRAITYEV, V. N.

185T8

USSR/Chemistry - Combustion

Mar 51

"Measurement of the Concentration of Oxygen Atoms in Flames With the Aid of NO," I. V. Karmilova, V. N. Kondrat'yev, Inst Phys Chem, Acad Sci USSR, Moscow

"Zhur Fiz Khim" Vol XXV, No 3, pp 312-322

Measurement of intensity of yellow-green NO₂ incandescence extends use of Gaydon's method for qual detn of at 0 in flames with NO to quant detn of its concn. According to this method, concn of at 0 in hot CO flames is of same order as equil concn (at flame temps > 2,600° abs). Since introduction of NO changes

185T8

USSR/Chemistry - Combustion (Contd)

Mar 51

combustion conditions, measured concn must be referred to changed conditions.

185T8

KONDRAT'YEV, V.M., chlen-korrespondent.

[Structure and chemical properties of molecules] Stroenie i khimicheskie
svoistva molekul. Moskva, Izd-vo "Znanie," 1953. 31 p. (MLBA 6:10)

(Molecul)

1. Akademiya nauk SSSR.

KONDRAT'YEV, V.N., akademik.

Problems of chemical kinetics. Vest.AN SSSR 23 no.11:49-64 N '53.
(MLA 6:12)
(Chemistry, Physical and theoretical)

KONDRAT'YEV V.N.

TERENIN, A.N., akademik; KONDRAT'YEV, V.N., akademik; KHUNYANTS, I.L., akademik; KABACHNIK, M.I.; SOKOLOV, N.D., doktor fiz.-mat. nauk; REUTOV, O.A., doktor khimicheskikh nauk; MOSKVICHEVA, N.I., tekhnicheskii redaktor

[Status of the theory of chemical structure in organic chemistry]
Sostoianie teorii khimicheskogo stroeniia v organicheskoi khimii.
Moskva, Izd-vo Akademii nauk SSSR, 1954. 122 p. [Microfilm]
(MIRA 7:10)

1. Chlen-korrespondent AN SSSR (for Kabachnik) 2. Akademiya nauk
SSSR. Otdeleniye khimicheskikh nauk
(Chemical structure) (Chemistry, Organic)

KONDRAT'YEV V.N.

"APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000824220002-1

"Application of Tracer Atoms in the Study of the Process of Chemical Reactions," a paper presented at the Atoms for Peace Conference, Geneva, Switzerland, 1955

KONDRAT'YEV, V.N.

[Tagged atom method in the study of the mechanism of chemical reactions] Primenenie mechenykh atomov k izucheniu mekhanizma khimicheskikh reaktsii. Moskva, 1955. 19 p. (MIRA 14:6)
(Chemical reactions, Rate of) (Radioactive tracers)

KONDRAT'YEV, V.N., akademik, redaktor; EMANUEL', N.M., doktor khimicheskikh nauk, redaktor; SHEVCHENKO, G.N., tekhnicheskiiy redaktor.

[Problems of chemical kinetics, catalysis and reactivity] Voprosy khimicheskoi kinetiki, kataliza i reaktsionnoi sposobnosti; doklady k Vsesoiuznomu soveshchaniyu po khimicheskoi kinetike i reaktsionnoi sposobnosti. Moskva, Izd-vo Akademii nauk SSSR, 1955. 884 p. [Microfilm] (MIRA 8:5)

1. Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk. (Chemical reaction) (Catalysis)